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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/814,883	03/31/2004	Kevin J. Orvek	10559-932001	7571
20985	7590	07/12/2006	EXAMINER	
FISH & RICHARDSON, PC P.O. BOX 1022 MINNEAPOLIS, MN 55440-1022			STARK, JARRETT J	
			ART UNIT	PAPER NUMBER
			2823	

DATE MAILED: 07/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

A

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/814,883	ORVEK, KEVIN J.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Jarrett J. Stark	2823	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 13 June 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) 19-29 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,4,7,9-12 and 14-16 is/are rejected.
- 7) ☒ Claim(s) 3,5,6,8,13,17 and 18 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Response to Arguments*

Applicant's arguments filed 6/13/2006 have been fully considered but they are not persuasive.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

The rejection was made obvious of the combination of references, Storbeck et al. (US 6,928,892) in view of Shah (US 5,247,827). Storbeck discloses the use of a particle detection system for detecting particles inside a semiconductor processing chamber. Storbeck discloses the claimed detection system but does not specifically disclose the specific type of detector. It would be obvious to one of ordinary skill to select a specific detector to suit the specific needs of the system or objects being detected. Shah discloses a particle detector that detects small particles by the use of two electrodes. It would be obvious for one of ordinary skill in the art to select the detector disclosed by Shah to use in Storbeck's detection system in order to detect small particles.

In regards to the specific detector design Shah discloses the detector is made of two electrodes. Two electrodes are obviously two conductive lines (Shah, Fig. 2 shown

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below). The spaced lines/electrodes measure the conductivity of particle, which obviously relies on a particle to complete an electrical connection between the two electrodes/conductive lines, therefore it is obvious that they are spaced with a pitch related to the diameter of the particles of interest. If the line are spaced too far apart the particles will pass directly between the lines and not complete the electrical connection, and the detector will not work. As the independent claims are worded, they are not patentably enforceable over Storbeck et al. in view of Shah.

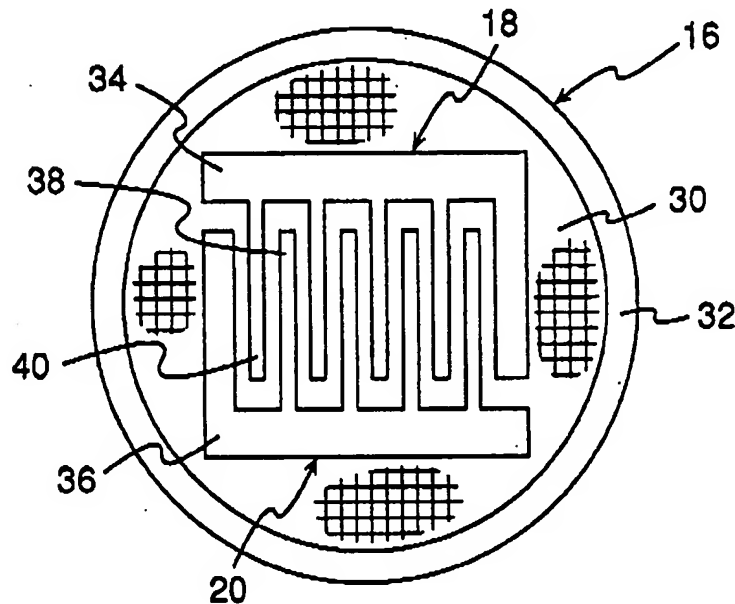


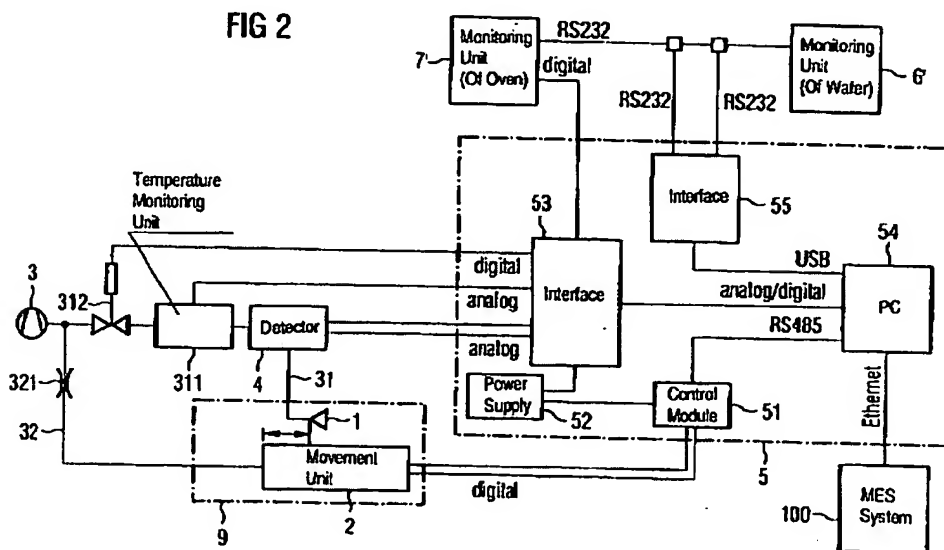
FIG. 2

***Allowable Subject Matter***

Claims 3,5,6,8,13,17, & 18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

**Claim Rejections - 35 USC § 103**

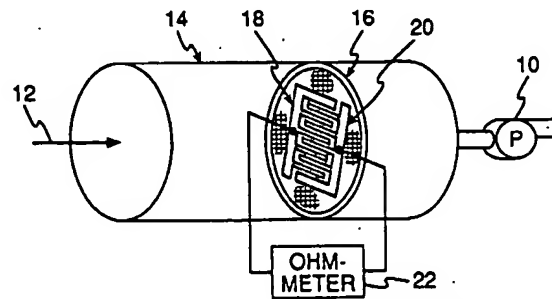
**Claims 1,2,4,7,9-12,14-16** are rejected under 35 U.S.C. 103(a) as being unpatentable over Storbeck et al. (US 6,928,892) in view of Shah (US 5,247,827).



**Regarding claim 1,** Storbeck discloses an apparatus comprising: an vacuum chamber containing a particle detecting integrated circuit. (Storbeck, Figure 2-ref# [4] & Abstract)

Storbeck discloses a particle detector however, does not expressly disclose the particle detecting integrated circuit including a device having a pair of exposed conductive lines defining a channel (Shah, Fig. 2 shown above show that the electrode/lines define a channel) to receive particles with the pair of exposed conductive lines spaced at a pitch relating to the diameter of particles of interest.

Shah discloses the particle detecting integrated circuit including a device having a pair of exposed conductive lines spaced at a critical pitch corresponding to particles of interest. (Shah, Figure 1 – also see above response to arguments)



The two references are analogous art because they are from a similar problem solving area of particle detection inside a semiconductor processing chamber during manufacturing.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use a particle detector with two exposed electrodes to detect particles inside the chamber. Therefore, it would have been obvious to combine Storbeck with Shah to obtain the invention as specified. (Shah, Col. 1, 62-66)

In semiconductor fabrication, contamination, for example by particles or foreign substances, constitutes a great risk with the consequences of reducing the quality and total failure of the electronic components. (Storbeck, Col. 1, 15-18)

The invention may be summarized as a method and apparatus for detecting the conductivity of particulate matter, such as dust, carried in air or other gases. Air is pumped through a filter having a mesh size sufficiently small to filter out the particles. An interdigitated electrode structure is formed on the upstream side of the filter. The conductivity of the dust is determined by measuring the electrical resistance between the electrodes. (Shah, Col. 1, 62-66)

**Regarding claim 2, Storbeck in view of Shah, discloses the apparatus of claim 1 further comprising a computer system linked to the particle detecting integrated circuit. (Storbeck, Col. 8, 34-43)**

**Regarding claim 4, Storbeck in view of Shah, discloses the apparatus of claim 1 wherein the particle detecting integrated circuit includes a plurality of devices. (Shah, Figure 1)**

**Regarding claim 7, Storbeck in view of Shah, discloses the apparatus of claim 2 wherein the computer system detects a change in current when a metallic particle shorts the pair of exposed conductive lines.**

It is inherent that a metallic (conductive) particle comes in contact with two previously electronically isolated electrodes, the metallic particle will create a path for an electrical current which will "short" the conductive lines.

**Regarding claim 9, Storbeck in view of Shah, discloses an apparatus comprising: a mask stage in a vacuum chamber of semiconductor processing equipment; a particle detecting integrated circuit embedded in the mask stage (Storbeck, Figure 2-ref# [4] & Abstract)**

The particle detecting integrated circuit containing a device having a pair of conductive lines exposed to a local vacuum environment, the pair of lines defining a channel to receive particles, with the pair of conductive lines spaced at a pitch related to

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the diameter of particles of interest. (Shah, Figure 1 – also see above response to arguments)

**Regarding claim 10**, Storbeck in view of Shah, discloses the apparatus of claim 9 further comprising a computer system linked to the particle detecting integrated circuit. (Storbeck, Col. 8, 34-43)

**Regarding claim 11**, Storbeck in view of Shah, discloses the apparatus of claim 10 wherein the pair of conductive lines have an applied voltage. (Shah, Figure 1- Ohm meter)

**Regarding claim 12**, Storbeck in view of Shah, discloses the apparatus of claim 11 wherein the computer system detects a change in current when a metallic particle shorts the pair of conductive lines. (Shah, Figure 1- Ohm meter- zero resistance)

**Regarding claim 14**, Storbeck in view of Shah, discloses the apparatus of claim 10 wherein the computer system is semiconductor component circuitry.

It is inherent that computer systems are “semiconductor component circuitry”  
EXAMPLES: the computer’s CPU and memory are semiconductor component circuitry, with out them there is no computer.



**Regarding claim 15,** Storbeck in view of Shah, discloses the apparatus of claim 1Q wherein the computer system is off-chip circuitry. . (Storbeck, Figure 2-ref# [54])

**Regarding claim 16,** Storbeck in view of Shah, discloses the apparatus of claim 9 wherein the particle detecting integrated circuit comprises a plurality of devices.  
(Shah, Figure 1)

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jarrett J. Stark whose telephone number is (571) 272-

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6005. The examiner can normally be reached on Monday - Thursday 7:00AM - 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Smith can be reached on (571) 272-1907. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JJS  
June 28, 2006



MICHELLE ESTRADA  
PRIMARY EXAMINER